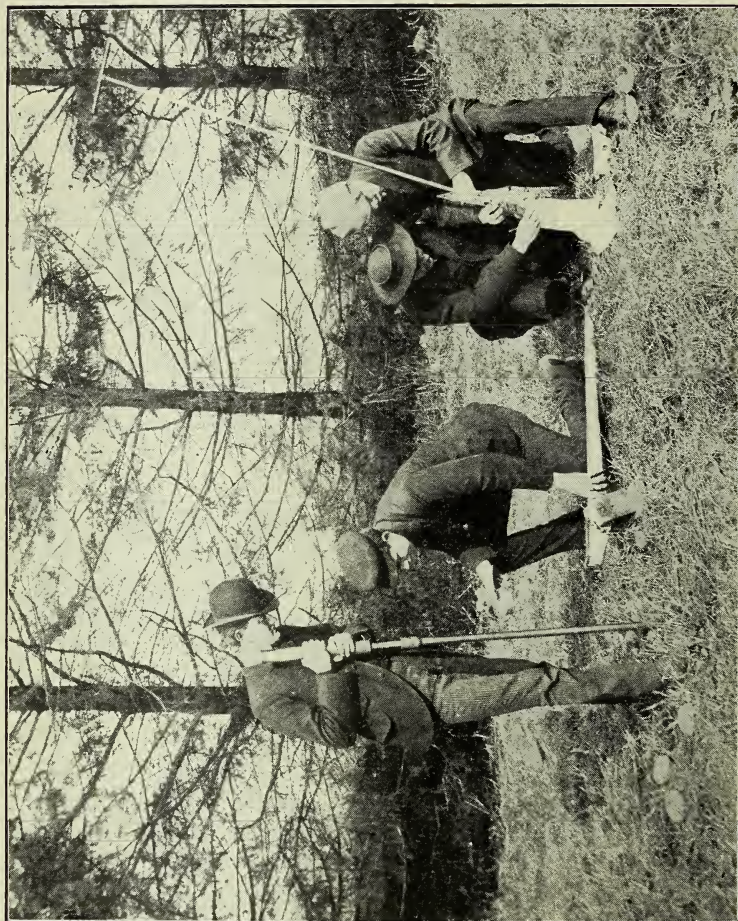


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STUDENTS TAKING SOIL SAMPLES

THE AGRICULTURAL STUDENT.

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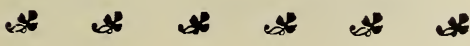
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The work of the Agricultural Student Union is showing the same rapid development this year as last, and under the new regime of divided management is pushing forward to fields of much wider usefulness. The work of coöperative experimentation, conducted through the station is developing wonderfully in magnitude and importance and is receiving no small amount of recognition in the various agricultural publications. The circular for 1904 is far more complete than ever before and the interest that is being shown by the farmers of the State insures a most successful future. The work is under the immediate direction of L. H. Goddard, who is now employed by the station in the capacity of superintendent.

The work of the division having to do with agricultural extension under the guidance of the College of Agriculture is mentioned elsewhere in this issue. It need only be said here that the work is developing much more rapidly than was expected, and already a large number of clubs have been formed in the schools of the State with a total enrollment of almost a thousand members. No one has as yet been secured to conduct the work, although its rapid



growth makes it plainly evident that such a person must be secured at an early date. It is very gratifying to those interested in the work of the Union to note the development which is taking place and the benefit that is sure to come from the establishment of the organization.

The contest for funds for the University has been of long duration, lasting through almost the entire period of the legislative session. The mill-tax bill appropriating fifteen hundredths of a mill for running expenses for the next two years was passed some weeks ago and previously announced, but a request for special appropriations was included in the general appropriation bill which at this date is still in the hands of the finance committee. The asking was first set at \$300,000, but after being subjected to various reductions in the committees it was finally placed at \$260,000, \$100,000 of which was for the rebuilding of the chemical building, \$75,000 for the College of Agriculture, \$60,000 for a mining and ceramics building, and \$25,000 for equipping buildings already provided. As we go to press there is persistent rumoring of an additional reduction, but nothing definite can be given as to the possible outcome.

One thing is gratifying to the agriculturists of the State and that is the recognition which is proposed for the College of Agriculture. This was due in large measure to the careful and judicious work of those in authority at the college and to the aid rendered by the various farm organizations and individual farmers of influence in the State. The State Grange deserves special mention for the stand it has taken in this matter and for the aid it has given.

The appropriation was asked for certain necessary improvements, notably

the building of up-to-date barns, and for the purchase of more land and for new equipment, all of which are extremely necessary if the college is to retain its place among institutions of its class. It is to be earnestly hoped that no further reduction will be made in the bill and that not only the College of Agriculture but the University shall receive just recognition in this matter.

Agricultural Extension in Ohio.

The idea of agricultural extension is taking wonderful hold among the people of the State. Ohio has been slow in adopting measures which seek to give agricultural teaching the widest dissemination and the plans that have now been adopted are quite different from those in many other states, but they are proving effective. And while it is universally true that agricultural education has been conducted in the reverse of the natural order, or as has been said "the ladder of learning has been let down from above," this was of necessity under existing conditions. But agricultural education is on its feet; agriculture has been reduced to a pedagogical basis and is fast assuming her just place. With this then comes the possibility of beginning our agricultural instruction, our teaching of the proper perspective, where it belongs,—in the elementary schools.

The plan that has been gradually shaping itself in Ohio and which has been mentioned several times in these columns is that of establishing agricultural clubs in the rural schools under the general supervision of the Agricultural Student Union and the College of Agriculture to be united also into a general organization known as the "Federation of Agricultural Clubs of Ohio." The bulletin which appeared re-

cently, Number 10, Series 8 of the University publications sought to formulate plans for the establishment of clubs throughout the State and to suggest lines of work which would be profitable. Several lines of work were suggested, such as the growing of a small plat of corn, of a vegetable garden, of a flower garden, the testing of soils for acidity by means of litmus paper, the collection of flowers, of seeds, of woods, etc.

The response to this bulletin has been remarkable and has far exceeded the expectations of the promoters of the work. Up to this time over twenty clubs are proposed for the coming season. There have been 548 applications for the corn test, 1189 for flower gardens, and 978 for vegetable gardens, besides some applications for special lines of work. To meet this demand some rather strenuous efforts have been made. It has been decided to supply in so far as possible seeds for the flower and vegetable garden work, corn for planting a small plat and the litmus paper for making soil tests. As to the flower and vegetable seeds, arrangements have been made with the U. S. Bureau of Plant Industry to supply these free of cost in convenient sets for the work. The corn will be supplied from the college farm. Directions for planting seeds and for conducting the work are being mailed to each club to be distributed among the members. With these is included also a blank form with suitable and suggestive questions for the children to answer, which is to be filled out and returned to the College of Agriculture. The idea in this is to keep a record of the work done which will serve as a basis for future suggestions, to keep in touch with the children and to develop their powers of observation.

It must of course be understood that these methods are experimental to a large degree, although the work done in Clarke County last season proved a great success. Little can be predicted as to the effect these efforts will have upon the teachers or upon the children, but the interest that has been shown has been so marked that there is little anxiety felt for the future.

Annual Sheep Shearing Festival.

On Friday, April 15, the stock judging room of Townshend Hall was the scene of an interesting event. It was the annual Sheep Shearing Festival instituted last year by Professor Plumb.

The event had been well advertised throughout the State and early in the day expert shearers and interested sheep breeders began to arrive from the various sheep sections of the State.

Prizes were provided by the Chicago Flexible Shaft Co., which also provided machines for the contest in machine shearing.

In the morning a contest in shearing by hand was entered by eight expert shearers. The score by which their work was judged included the quality of the work, the number of cuts, the speed in the work, handling of the shears and the handling of the sheep. The judges were J. C. Westernhaven of Amanda, a noted Shropshire breeder, and C. S. Chapman of Marysville, a breeder of Delaine Merinos.

Following this event, Mr. H. J. Angle, an expert machine shearer, who represented the Chicago Flexible Shaft Co., gave an exhibition in shearing with the shearing machine.

In the afternoon an exhibition in sheep judging was given by a class of students, illustrating the work that is

done in the regular class practicum in the Animal Husbandry Department.

The contests for the afternoon consisted in machine shearing by amateurs and an exhibition of rapid hand shearing by experts.

In all the contests the work of G. A. Shaw of Marengo found favor in the eyes of the judges, and he won first prize in two events and tied with James R. Lucas of Outville for first in a third event. Other winners were J. A. Ryder, Georgesville, and J. A. Irwin, Harpster, Ohio.

During the whole day the stock judging room was crowded with interested spectators. Much credit is due Professor Plumb for the manner in which the annual festivals have been conducted and for the interest which they help to arouse throughout the State in the sheep industry.

The exhibition of sheep judging by the students made a very good impression on the visitors and illustrated well their training, for in spite of the fact that they were selected not for their knowledge of sheep, but as average students their judgment tallied very closely with that of the expert judge who also placed the sheep. Such exhibitions do much to place the work of the college in its proper light before the farmers of the State.

J. C. W.

Appropriation for Cornell College of Agriculture.

The long and extremely bitter fight for building funds for the New York College of Agriculture at Cornell University has resulted in the passage by both houses of the legislature of the bill providing \$250,000 for this purpose. Similar bills have been before the legislature time and again, but never has the contest been so spirited as that which

has just ended, and never before has the college received just recognition.

The bill passed the lower house by a vote of 89 to 43 and the senate by a vote of 30 to 17, both good round majorities. At time of writing it is not known definitely whether or not Governor Odell will sign the bill, but he is known to be in thorough sympathy with the college as shown by his recent message when he urged the passage of some such measure. There is therefore little fear of his veto and the bill will undoubtedly become a law in the very near future.

The successful passage of the bill indicates something of the efforts that were put forth by the authorities and friends of the college, as the opposition was exceedingly stubborn. A feature of the contest was a substitute bill presented by the presidents of several smaller colleges in the State whose only cause for opposition as it appeared was that of jealousy. Prof. L. H. Bailey, whose untiring efforts in behalf of agricultural education have meant so much to the cause of agriculture in New York and in the nation as a whole, was prepared to defend the bill with facts and with results of work already done. His colleagues were equally well prepared and the result has been a signal victory for the cause of agriculture in New York State.

Since the reorganization of the college last year it has been evident to the most casual observers that something was to be done at Cornell, and this victory in the legislature the first year of the new regime is indicative of the strength of the men in authority and the possibilities for the future of the college.

THE STUDENT wishes to extend its most hearty congratulations to all those engaged in this contest for the college.

but especially to its constant friend, Prof. Thomas F. Hunt, in the possibilities which this act will present to him.

Centralization of Rural Schools.

In the days of our early history, when our population was quite scattered and towns were few, as compared with the present, most of our schools were in the country. They were generally taught by men, in many places, by quite ignorant men, while in others, they were taught by the local preacher, who frequently was a college graduate. In this way, many an eminent statesman, jurist, or journalist, made his start, at the same time gaining for himself a means of livelihood. But now this is changed. Along with other development, cities have arisen, and large numbers of our people have flocked into them, and in these have been established schools, the conception of which was never had in those earlier times. These schools have been graded and developed almost to the extent of becoming small colleges. Indeed in the West, the city high schools which prepare for life as well as for college, have almost completely prevented the coming in of the old-fashioned academy.

While this has been going on in the cities the country schools have developed but very slowly, and indeed in many instances have really gone backward, for the old time "good teacher" has gone to the city, and the old time "good scholar" has followed him.

Men well know that if this emigration from the country to the city, for higher education, continues, the country as well as its schools, will be sapped of its very vitality, and men are coming to believe that it is requisite for them to provide for the children of the

country the same privileges for education as the city children possess.

Realizing the force of this condition, an attempt has been made to discover to what extent it really exists, and what could be done for its amelioration. The result of this attempt has been what is known as centralization or consolidation of country schools. By this, is meant the union of three or more schools into one, that shall be large enough to be interesting, strong enough financially to afford a comfortable building and provide competent teachers, and reasonable facilities for the work. It also means that an outlying district having not a sufficient number of children for a strong school, shall be united with a strong school in a nearby district.

Centralization does not necessarily mean the union of all the schools of one township into one school (which, however, is the idea of complete centralization), but the union of such schools as will be a benefit to the schools so united. In most cases, however, complete centralization is advisable.

Centralization also means the transportation of the children to the school. This is the point upon which so many of the opponents to centralization, taking a short-sighted view, have taken their stand. It seems to them impossible to transport the children in practical ways, and that without incurring a great expense, but experience proves the contrary.

Centralization may in many cases mean many changes in buildings, such as moving together two or more of the old ones, adding to one of them, or building a new central building. In many instances where the plan has been tried, only temporary buildings have been erected. It may be well to say that

a permanent building is always by far the best, for it has proven that where once established, the plan is never abandoned.

This system first began in Massachusetts in 1869, since which time more than 65% of the schools of the State have adopted it. In this state it has been proven that the attendance of the children was better among the transported children, that there was less sickness and no accidents, while there has been a considerable saving of money; in some instances, small towns and townships have saved \$600 or more per year. From Massachusetts the plan has spread until it is now in operation in parts of twenty states, not in one section, but in all sections of the country.

In Ohio, the work has been carried along principally in the northeastern portion, in Trumbull, Geauga, Ashtabula, and Lake counties. In the counties where consolidation has been tried, for no reason, would the people revert to the old system of country schools, and it is a singular fact that the persons who were at first most strongly opposed to the plan are now its most ardent supporters. This fact surely speaks highly in favor of the plan.

There are many arguments which may be advanced in its favor. The inability of small, weak schools to pay large wages is manifest, but it is also well to realize the available supply of teachers for country schools. In other words, "what are their chances for getting 'good teachers?'"

On this point Iowa reports for the year 1900, that out of 21,034 teachers licensed, 3,560 had no experience whatever in teaching, and 4,208 had taught less than one year; thus 7,768 or more than one-third were inexperienced, not to mention the large number of experienced and unsuccessful teachers.

Out of the 21,034 teachers, 7,228 had only third grade certificates and of this number 6,167 or over six-sevenths were issued to females, presumably young girls, many of whom had not completed even the common school course. This is a fair sample of the reports from nearly all the states, when the subject is touched upon, and moreover they all treat upon it at length, and with more evident concern than any other problem, connected with public schools. Besides they all seem to arrive at the same conclusions, that the only remedy is fewer and larger schools, with a less number of teachers at better wages, thus securing not only better talent and training but a better division of labor and better supervision. Reports from other states as Michigan and Ohio show that by reducing the number of schools, many of which have from three to ten pupils, and forming larger schools, that even with the cost of transportation and higher wages of teachers, the children are taught at a lower rate per capita, than by the old system.

From these various facts it seems that but one conclusion can be drawn, and that is, that the day of the old common country school is drawing to a close. That it was useful in its day, but that its day is past and it must give away as all else to the newer and more modern methods of conducting the work, and that these newer methods are nothing less than a graded country school, on the same basis as the graded city school, giving to the country scholar the same privileges and advantages enjoyed by his city neighbor. The very fact that in so many places are the people awakening to the real situation, points to a rapid growth and ascent of this new idea, and the next few decades will undoubtedly see a great revolution in the present school methods.

F. L. W.

Indian Agricultural Schools.

Our ideas of the character of the Indian have changed considerably in the last half century. We have found much more to praise in his nature than was formerly thought possible. In the old days when we mistrusted the Indian and he mistrusted us, circumstances were not propitious for over-estimating the virtues in Indian nature. But times have changed; we have come nearer the Indian and he has come nearer us. We have found that while he has faults they aren't so grievous as we first imagined and they are not such as cannot in time be overcome. We realize, however, that it is with the Indian as with the negro, the highest type of civilization cannot be developed in a day nor in a generation, but that time and a certain guidance of his education are essential. The industrial phase of education applies to the Indian and negro alike and it is largely through this means that we may expect results. The Indian too has come to realize a few important facts. It is slowly dawning upon him that the old days have passed away never to return; that conditions have changed materially and that he must conform to these conditions or cease to exist.

As to education, the hope of this race is in the education of its youth. The Government awoke to this fact and schools have been established in all the reservations. These schools while not ideal are the best possible under the conditions and may be divided roughly into four classes. First, the day school, not unlike our district school, is possibly the most wholesome and worthy of all since they are situated near Indian camps where the civilizing influence of the school is brought directly in contact with the home life of the native. These schools will no doubt later be inducted

into the regular school system of the country.

The next class is the reservation boarding schools. These are built near the agency and according to Professor McCowan of the Chilocco Agricultural School, are mere roosting places for the squab on its first flight from home, and are not considered very satisfactory. It would be better to transfer directly from the day schools to the well-equipped non-reservation schools.

The third class is the non-reservation schools. These are the real training schools. They are large and finely equipped and are located as their name suggests away from the reservation near the centers of civilization. They are equipped for the training and the giving of proper instruction in all grades and trades and in farming with its kindred branches.

The fourth and last is the college. At present there is only one college devoted to agriculture for the Indian in the United States—the Chilocco Agricultural College, located in Kaye County, Oklahoma. There is an attempt being made to establish one at Wahpeton, North Dakota, Congress having appropriated \$100,000 for this purpose.

At Chilocco everything is based on agriculture and its kindred industries. The language, the mathematics, the geography and nearly everything that is taken up in the literary classes is based as far as possible upon farming and stock raising. The students are taught the value and characteristics of soil, fertilizers, the selection and breeding of stock, seeds, and the like. They are taught to judge all classes of live stock, poultry and seeds for points. They are taught butter and cheese making, how to feed, how to kill, and how to select the best parts of beef and hogs and how to grow baby

beef. The work is so arranged as to keep the students busy and all of them are deeply interested and anxious to get back to their allotment and work it instead of leasing it as is the rule in some tribes. This school is doing much for the Indian and it will be through this and similar schools that the Indian will be brought from the present half-civilized condition to that in which he will no longer need the support of the government but will be a good and prosperous citizen.

L. H. P.

Exhibit of Agricultural Colleges and Experiment Stations at St. Louis.

The Louisiana Purchase Exposition will omit no feature in showing the populace of the world the advancement being made in civilization. The exhibit of the Colleges of Agriculture and Mechanic Arts and Experiment Stations which is being prepared will undoubtedly prove itself most interesting, as these institutions, today, are doing more good for the world in general than any other organization in the country.

Three years ago the movement to install a collective exhibit of the land grant colleges and experiment stations in education and research was instituted at the meeting of the Association of American Agricultural Colleges and Experiment Stations in Washington, and an exposition committee was appointed to look into the matter. The committee at the Atlanta meeting the next year reported in favor of an exhibit and was charged to solicit from Congress the sum of \$60,000 for carrying out the project. It was found necessary to increase the amount to \$100,000 to have the exhibition of animal husbandry more complete. A special board was authorized by act of Congress to control the expenditure of this money

and to arrange with the various colleges and experiment stations for an exhibit illustrating their progress in education and experimentation in agriculture.

The Louisiana Exposition Company has provided at its own cost and expense a suitable floor space of 11,045 square feet for the exhibit.

The exhibit will be arranged in sixteen groups, seven devoted to agriculture and nine to mechanical arts. The men who are in charge of collecting each group are experts in their lines and are doing all possible to make the exhibit a success.

Individual institutions will not have separate divisions of space, but rather the various subjects in the groups will be represented by the best material that can be procured from the several colleges and stations. The methods and means of teaching agriculture and mechanic arts to the best advantage, as well as the results from research in these lines will be illustrated to the public mainly by students interested in such work.

The various groups of the Agriculture Exhibit will be: Biological Sciences, Inspection or Control Work, Plant Production, Zootechny, Agro-techny, Rural Engineering and Rural Economics.

The Biological Sciences will be represented by Botany, Economic Zoology, Entomology and other sciences relating to agriculture. Prof. M. A. Scovell of the Kentucky Agricultural Experiment Station will have charge of the Inspection Exhibit which will consist of fertilizers, feeding stuffs, foods, dairy glassware, nursery stock and insecticides. Plant Production will consist of a plant laboratory, soils laboratory, fertilizers, field crops, horticultural plants and forestry, plant disease and economic insects. Prof. M. F. Miller of the Ohio

State University will be in charge of the Soil Exhibit, Prof. E. B. Voorhees of the New Jersey Experiment Station, of the Fertilizer Exhibit, Doctor W. N. Evans, United States Office of Experiment Stations, of Plant Laboratory, Mr. J. I. Schultz, United States Office of Experiment Stations, Field Crops, Prof. S. B. Green, University of Minnesota, Horticulture and Forestry, Professor F. C. Stewart, New York Experiment Station, Plant Pathology, and Prof. C. P. Gillette, Colorado Agriculture College, Economic Entomology.

The Zootechny Exhibit will consist of Animal Husbandry and Veterinary Science. Doctor H. P. Armsby, Pennsylvania State College, will have charge of the Animal Nutrition, Prof. T. F. Hunt, Cornell University, Animal Husbandry, and Doctor D. S. White, Ohio State University, Veterinary Medicine.

The Agrotechny Exhibit will consist of Dairying, Sugar-making, Canning, Cider and Vinegar-making, Finished Meat Products and Tobacco Manufacture. Prof. E. H. Farrington, University of Wisconsin, will be in charge of the Dairy Laboratory, and Doctor W. C. Stubbs, Louisiana Experiment Station, of the Sugar Laboratory.

Prof. E. Mead, University of California, will have charge of the Rural Engineering Exhibit which will consist of the Layout of Farms, Building and Fences, Water Systems, Irrigation, Drainage, Sewage System, Farm Machinery and Roads.

Prof. F. W. Card, Rhode Island Colleges of Agriculture and Mechanic Arts, will have charge of the Rural Economics Exhibit.

The Department of Mechanic Arts will exhibit the Fundamental Subjects, including Chemistry, Physics, Mechanics and Mathematics, Civil Engineering, with Prof. A. Marston, Iowa State Col-

lege, in charge, Mechanical Engineering, under Professor B. V. Swenson, University of Wisconsin, Mining Engineering, under Prof. S. B. Christy, University of California, Chemical Engineering, under Doctor W. H. Walker, Massachusetts Institute of Technology, Architecture, under Prof. W. H. Lawrence, Massachusetts Institute of Technology, Drawing and Shop Practice, under Prof. F. P. Anderson, Kentucky State College, Domestic Science, under Prof. Maude Gilchrist, Michigan Agricultural College, and Ceramics, under Prof. Edward Orton, Jr., Ohio State University.

The idea of the promoters of this display is original and somewhat novel, for it is to be largely a display of methods of instruction. Formerly the idea has been to illustrate results of work merely, but the fundamental idea in this exhibit is to show how the work is done, how students are instructed and only enough of results to illustrate the methods.

As an example the following from the Experiment Station Record will illustrate something of the stock exhibit of the colleges and stations:

"The committee on the exhibit of the colleges of agriculture and mechanic arts and experiment stations at the Louisiana Purchase Exposition has provided for the exhibition of the work with live stock and in agronomy at these institutions. This will include demonstrations of the methods of teaching and investigation and exhibits of the results of investigations, together with a daily program of lectures and class demonstrations in stock and grain judging.

The exposition authorities are expected to provide suitable quarters, consisting of a judging and demonstration pavilion, with amphitheater of ample seating capacity, and facilities for conducting slaughter and block tests and

cooking trials. Exhibits of different classes of live stock have been assigned to different institutions and will show the results of different methods of feeding, the improvement of grade animals by good sires, the influence of age on cost of production and other points of interest in this connection. A number of slaughter and block tests are planned for. This live stock exhibit will of course supplement the exhibits in the educational building, and should prove a most instructive feature as illustrating the methods which have been worked out at the colleges and stations."

The general plan of the exhibit is receiving the hearty support of all agricultural educators, and the benefit that may be derived from such an exhibit will undoubtedly be of much importance. The idea illustrates something of the rapid development in agricultural work and in methods of instruction at our agricultural colleges and the plan of illustrating it promises to be most efficient.

E. S. P.

A Plant Introduction Garden.

The United States Department of Agriculture has decided to establish a Plant Introduction Garden and Experiment Station at Chico, California. Contracts for the necessary lands have been closed and work has been begun on what will undoubtedly be the greatest institution of its kind in America and perhaps in the world. A beginning will be made with ninety acres, but it is the intention of the department to extend the area as the needs of the institution require. The garden will be devoted to experimental culture of the plants introduced from various parts of the world and to a careful study of plant life.

Such an institution has long been contemplated by the Agricultural De-

partment. California was selected for its location on account of climatic conditions which admit of the culture of tender plants from the tropics and of northern products as well. The ideal location for such an institution is that which admits of the successful cultivation of the widest possible range of products, and the commission entrusted with the duty of selecting the site believe they have found it at Chico.

This commission was composed of Prof. P. H. Dorsett, Government expert who will have charge of the institution, and Prof. A. V. Stubenrauch of the University of California. They spent months in making a careful study of conditions affecting plant life in various portions of the State visiting and carefully inspecting each locality likely to prove available. The decision in favor of Chico was reached some time ago, but the site selected could not be secured and another tract had to be chosen which has now been done and the purchase consummated.

Chico is situated near the eastern border of the great Sacramento Valley, seventy-five miles north of Sacramento, the State Capital, and was the most northerly point considered by the commission. Climatic conditions in California are effected but little if at all by conditions of latitude. The orange, the lemon and the olive being staple products of a district that measures fully five hundred miles north and south.

The Campbell System of Soil Culture.

Much interest has arisen in the semi-arid belt in the methods of soil culture advocated and brought into prominence by H. W. Campbell, of Holdrege, Nebraska. Mr. Campbell is a practical farmer whose powers of observation are exceedingly keen and who has been studying the cultural conditions of

Western Nebraska for many years. The result has been that with close observance of phenomena, with careful application of principles in the field and with due consideration of all that was known of soil culture and soil physics, he has been able to work out methods of tillage and soil management which give results that are truly wonderful for that region.

The fundamental idea in the method is the conservation of soil moisture which of course is the important thing in that region. He makes extensive use of the earth mulch in various forms and has studied ways and means until the results are in many cases almost marvelous.

The disk harrow, the Acme harrow and the ordinary drag harrow are indispensable, and an implement known as the subsoil packer has been devised which is an entirely new idea. It resembles the disk harrow in appearance, but the discs are thickened so that they present to the soil a wedge-shaped surface, giving both a lateral and downward pressure which is said to act very efficiently, obliterating any large openings beneath the overturned furrow slice after plowing. The weeder is also made large use of in keeping the surface in condition.

As an example of his teachings the following on corn growing is characteristic:

Plenty of water in the soil means plenty of corn.

No after cultivation can make amends for a poor job of fitting the soil for a crop.

The deeper you can get the water stored in the ground before planting time the surer are you of getting a good crop.

Cultivate the corn at least once after each rain. If you don't need the water for this crop you may for the next.

Don't get the shallow culture idea too strongly fixed; two and a half to three inches of fine loose soil is about the best depth.

Watch the first approach of spring, and as soon as you can get into the field with a disc, go over the ground intended for corn. Nothing pays better.

There is no work done, cost considered, that seems to go further toward increasing the yield of corn than that of early double disking. This is quite true with reference to other crops. Also do not allow a crust to form under the mulch any more than you would on the surface. It will appear if you do not watch closely during times of extreme heat in long, dry periods. Don't let weeds grow; every weed means less corn.

Don't use the old long pointed four-shovel cultivator. To go deep enough with this tool, to make good protection for moisture is sure to destroy many of the corn plants. The cultivator that leaves the soil the finest and loosest and yet level is best.

Such hints as the above illustrate well the system and the great stress that is laid upon thorough tillage; and while these directions are of course intended for farmers in the semiarid belt, there are many points that eastern farmers could well embody in their farm operations. As an example of what such culture will do even in North Dakota a field of corn near Lisbon on the Soldiers' Home Grounds subjected to this treatment produced 82 bushels per acre, while the average corn of the locality in that season produced from 6 to 10. Like examples could be given of the increase in wheat yields often two or three times by this method and of various other crops. With such crops as wheat, of course the treatment of the ground before sowing is the all im-

portant item. Orchards too are wonderfully benefited and in many localities where fruit growing was considered impracticable, most fruitful orchards can be maintained.

The explanation of the whole matter is merely that intelligent and intensive tillage is practiced. Mr. Campbell has studied the phenomena of evaporation, of capillarity and of percolation as controlled by culture and by applying the proper principles in the field has obtained the results. He is a non-believer in the bonanza idea of farming, but an earnest supporter of the small farm and the farm home. His work shows what may be done. Certainly it will be along just such lines as this that the prosperity of our western country is to come,—smaller farms well cultivated, intelligent skill working hand in hand with nature. Mr. Campbell is doing a good work; he is rapidly coming to be recognized as a benefactor to mankind. It simply remains for his methods to become more widely known and to be accepted by the body of our western farmers.

County Experimental Farms.

An idea has taken root in Iowa regarding the use of county poor farms for experimental purposes, under the direction of the State Experiment Station at Ames. Trials were made last year in growing corn experimentally at the Sioux City farm, under the direction of the central station, and the results were so satisfactory that the advisability of using other poor farms for this purpose is being considered. It is intended to conduct such experiments on at least four other such farms during the coming season, and the possibilities of using all such farms over the State, where the farmers are sufficiently progressive to insist upon it, is suggested. The work may be of great value to

the farmers of the county, in such lines as demonstrating the acclimatization of varieties of certain crops, and especially in awakening an interest in experimental work.

The idea is at least worth considering in states where such farms may be used for experimental purposes, and is an indication of what may be done as our agriculture develops. Such suggestions are in direct harmony with our modern ideas of agricultural education in that they serve the purpose of carrying the work of our colleges and stations to the farmers, thus disseminating the teachings and discoveries of such institutions among those for whom they are intended.

Forest Protection.

The protection of woodlands is the oldest and most necessary branch of forestry. That it is the oldest may be seen from the ancient forest laws of centuries ago, in which the protection of the woods against men was the principal, and not infrequently the only aim, whilst protection against domestic animals also came later. After these followed decrees relative to the replanting of cleared areas, and the moderate and rational utilization of the forest produce. At the same time, it is the most necessary branch of forestry; for what is the use of the most careful sowing, planting, and tending of timber crops, if men, animals, and inimical forces of nature are to be allowed to act unhindered in the work of destruction? Under favorable circumstances, mere protection of forests is of itself at times sufficient to maintain a certain degree of density of crop, as in the case of selection fellings, when due protection is afforded against cattle, and more especially against goats and sheep.

The nature of the dangers to which woodlands are exposed is manifold, and their close consideration, together with that of the preventive and remedial measures to be adopted, necessitates some knowledge of various branches of the cognate sciences of forestry. Thus botany enlightens us concerning the forest weeds and fungi; zoology treats of the injurious forest insects and their life-history; silviculture indicates to us the protective measures against frost and heat, snow accumulations, and forest weeds; management of forests points out how the violence of storms can best be counteracted by careful location and succession of the annual falls, and how advantageous is the proper marking of all fixed boundary points; utilization of forest produce teaches us in what way timber crops and minor produce can best be harvested with least interference with the natural growth, development, and reproduction of the forest.

As above indicated, protection of woodlands teaches us concerning the dangers which threaten forest crops, and the best means of obviating them so far as lies in the power of the proprietor or forester. These means are not, however, always sufficient, and the individual proprietors would often be powerless to operate against such dangers unless supported by the State in the interest of public safety and the common weal: thus, in view of the importance and the value of woodlands for the general well-being, negligent proprietors are even compelled (in Germany) to adopt such reasonable protective measures as are permissible within the limitations of the common law. It is then that the state is able to assist in the protection of forests by the enforcement of rational forest laws in its capacity of supreme supervisor entrusted

with the carrying out of certain duties.

The forest reserve policy of the United States while exceedingly commendable so far as it goes is by no means sufficient to protect our lumber interests for any great time. It is estimated that at the rate we are now using our timber and if the present lumbering methods continue the supply of the United States will be exhausted in less than forty years. Certainly this fact should be sufficient to appeal to every loyal American, but it does not. Legislators and people alike seem to exhibit a decided indifference in the furthering of any rational forestry regulation. Luckily our chief executive is a man fully aware of the dangers of present methods and thoroughly informed as to the necessary remedies. The many expressions he has already made on the subject indicate a keen interest in this matter, and it is to be hoped that he may be able to persuade our legislators to take immediate and definite action.

There is no reason why the United States should not adopt some such measures as the older countries have adopted regarding forestry legislation, except that the commercial fever is still raging in our country. The thought of the masses seems to be to get wealth regardless of consequences, but we shall surely suffer later, and in no way more certainly than in the matter of lack of lumber resources.

Regarding ways and means of stopping this ruthless destruction and the establishment of a rational protection it must be said that the failure to realize the possibilities of scientific forestry is probably fundamental. While the lumberman of today levels the forests as a business and for the financial gain there is in it, it is undoubtedly true that few are aware of the financial possibilities of careful systematic forestry. But time is

an essential element, and care is necessary if systematic forestry be practiced, and the commercial lumberman will not begin it until he is compelled to. It is a hopeful sign to note in this connection that some of our large railroads are coming to appreciate the gravity of the situation and are buying up forest lands to be managed systematically for their future lumber supply.

It is time for radical action in this matter and it is hoped that both the states and national government will not be slow in establishing some means by which not only the remainder of our forest land may be systematically managed, but that reforestation of much of the waste land which has been cleared will be made possible. E. D. C.

Tree Planting for Ornament and Shade.

An article in the Columbus Horticultural Journal, by Professor W. R. Lazenby, is of interest at this time when nature is receiving so much attention:

Of late years much more attention has been paid to the planting of lawns, rural grounds, parks and roadsides than in former years. People are coming to better realize the value of trees and shrubs for purposes of ornamentation. Ideals as to the best method of planting and arrangement of lawns, parks, etc., have also changed much. The old or formal method of planting has largely passed away, the idea at present being to produce nature-like effects. This idea must not be carried to extremes, however. We do not want our parks and lawns like miniature jungles. The number and variety of shrubs and trees that should be used for various locations will depend on several factors.

First. The shade of different varieties of trees is not equally agreeable.

Some trees make too dense a shade. A heavy blanket will make a shade, but it is not an agreeable shade. Some trees give just such a shade. The horse chestnut is an example of such a tree. The head of this tree is too compact and the leaves too large to make a really pleasant shade. On the other hand some trees are too open to make an ideal shade. The honey locust and the willow may be cited as examples. So far as shade is concerned the beech or Norway maple make an almost ideal shade.

Second. Whether a tree is ornamental or not is largely a matter of individual taste. Taste is a personal matter and we cannot dispute it. The environment will also affect the ornamental qualities of a tree. In selecting ornamental trees we should always have due regard for unity and harmony. An apple or a peach tree may have a pleasing appearance in the orchard or garden, but is out of place on the lawn.

Third. Hardiness should always be taken into consideration in this climate. Many good shade or ornamental trees are not entirely hardy in exposed situations. Some of our fine trees are liable to attacks from insects. In some localities the elm is a prey to the canker worm and is badly infested by the fall web-worm. Nearly all of our most beautiful shade and ornamental trees have some important insect enemy. These pests are worse in some localities than in others, hence the need for the greatest care in selecting the trees we wish to plant.

Fourth. There are trees with large leaves and large petioles which begin to drop early and hence make a bad litter on the lawn. Such trees should be avoided. The Carolina poplar, the horse chestnut and the willow are examples of trees objectionable either for

their large leaves or their habit of shedding branches, thus littering the lawn or driveway.

Roads and streets demand more formal planting than lawns. Nothing is more beautiful than a roadway bordered by long rows of trees of the same species. The trees should be as near the same size as possible. The silver maple and the white or American elm are the most commonly used trees for street planting. They have many good points, and some serious faults. They are as good as any perhaps. The elm varies too much in form and outline to make a really effective border for a formal avenue. It is easily injured by drouth and dust, and at times falls prey to the canker worm. It is perhaps better for parks than for street planting. The silver maple will grow where many other varieties fail. It is, however, short lived and is liable to be broken by storms.

On the whole the subject of beautifying streets, parks and lawns by means of shrubbery or trees is coming to receive much more attention than it has at any time heretofore. Japan has a road thirty miles long with a continuous line of poplars on either side of the driveway. It is to be hoped that such things may be seen in our county before many years have passed. B.

DAIRY NOTES.

Wm. Van Meter of this year's class has been appointed night foreman for the Junkin-Straight Dairy Company of Pittsburg. The company has just completed a large sanitary milk plant and is distributing 1800 gallons of milk daily.

Robert Allen is filling a position with the Findlay Dairy Co. at Findlay, Ohio.

The following dairy legislation has been before the legislature this session:

A bill legalizing and establishing standard apparatus for the Babcock milk test was passed. It calls for the measurement of pipettes to be 16.6 cubic centimeters and the weight of the cream or other substance 18 grams. A fine of \$50 is inflicted for infringement of the law.

The standard for butterfat in full cream cheese has been raised from 20% to 30%, and the total solids in milk to 12% the year round.

A bill to cause all renovated butter handled by retailers to be so labeled passed the Senate but stranded in the House.

ALUMNI NOTES.

J. C. Perry, '01, is farming on his own farm near Columbia Station, Ohio.

F. P. Long is engaged in practical agriculture at Kingston, Ohio.

The recent assignment for the season in the Bureau of Soils places C. N. Mooney in Tennessee, E. O. Fippin in Missouri, A. H. Snyder in Maryland, H. L. Belden in Texas, and La Motte Ruhlen in Louisiana. N. P. Neill is at present located in Washington, D. C.

W. C. Mills, '98, Curator of the Archæological Museum at the University, is in charge of the Ohio Archæological and Historical Society Exhibit at the St. Louis Exposition. This display was also made at the Pan-American Exposition where it received much praise. Mr. Mills has recently returned from St. Louis, where he placed the exhibit in position.

Prof. C. W. Burkett, '95, Professor of Agriculture of the North Carolina College of Agriculture, was in Columbus recently accompanied by other representatives of the North Carolina Col-

lege looking up the matter of agricultural building plans. An appropriation of \$40,000 has been made for the construction of an agricultural building at that institution.

Ollie Ferguson, '03, is managing the college farm and giving instruction in agriculture at Wilburforce University.

Lloyd Jones, '03, has been appointed an assistant in agriculture at the Tuskegee Institute for Colored Youth in Alabama.

T. L. Wheeler, E. L. Zehring and Otto Eckman of this year's class, who entered on work with the Bureau of Soils April 1, are temporarily stationed at Washington, working in the laboratory. They expect to be detailed for field service later.

D. A. Tobias, ex-'04, is stock farming at Tobias, Ohio.

UNIVERSITY NEWS.

P. A. Easton could not return to school for this term on account of the sickness of his parents.

E. S. Poston is in school again after an absence of the greater part of last term, occasioned by an attack of typhoid.

The sheep shearing contest reported elsewhere in these columns, which was held in Townshend Hall on April 18, was very interesting and instructive. Much credit should be given Professor Plumb, in his efforts in conducting these annual festivals, and thus attracting attention to the Agricultural School by these unique and at the same time highly instructive events.

Prof. Henry A. Weber, head of the Department of Agricultural Chemistry,

has recently been appointed by the President of the St. Louis Exposition, as one of the committee of the International Pure Food Congress, to be held in St. Louis, Sept 26 to October 5.

The University Glee Club is to appear April 27 in a new role,—that of a minstrel show. The club membership has been largely increased since last term, and some very good minstrel talent has been found in the school. This is quite a new form of entertainment at the University and no doubt will be highly enjoyable.

George Burrige Viles, Ph. D., has been elected to fill the place left vacant by the death of Professor Mesloh. Dr. Viles comes from the East, having received his early education in the schools of Lowell, Mass. He received his A. B. and A. M. degrees at Harvard, and his Ph. D. degree at Cornell. He has traveled exclusively in Europe and spent one year in the University of Leipsic. He has further, for the last eight years, been instructor at Cornell, and thus comes to us an experienced instructor.

The baseball season opens April 23 and from all appearances the team will be quite strong this year. The bad weather of the last few weeks has greatly handicapped them, through lack of practice. Many of the best men are unable to play because of their University records. These various things keep the prospect from looking as bright as it otherwise would, but when the championship contest begins Ohio State will be in the race.

The annual Gym exhibition was held just before the close of the winter term. The class was large and enough men participated to completely fill the floor. Heekin won in the gold medal track contest, held just before the close of the

last term. This gives him the honor of being the best, all round, University track athlete.

Sweet Lavender, the play presented by the Strollers on April 8, was greeted by a very large and appreciative audience. The Strollers have arisen through troubles and tribulations until it is now only necessary that they announce a play by the club to create the kind of interest that was apparent at their last presentation.

Ex-Governor George K. Nash has been appointed to the Board of Trustees of O. S. U. to fill the vacancy occasioned by the election of Hon. Myron T. Herrick to the governorship of the State, and Trustee Smith has been reappointed.

An examination was held in Townshend Hall on April 13, under the provisions of the Cecil Rhodes will, providing a scholarship for each State in Oxford, England. Fifteen applicants took the examination, none of them, however, being from Ohio State.

The literary societies of O. S. U. will hold an Interliterary Oratorical Contest on May 6. The event will undoubtedly call out some good talent, each society being represented by their best man. The winner will represent O. S. U. in the Central Oratorical Contest at Delaware, May 20. The proceeds from the Interliterary Contest will go to make up the deficit incurred by the Ohio-West Virginia debate.

A large amount of apparatus has been shipped to St. Louis for the Soils Laboratory Exhibit, most of which will be made by this institution. A working laboratory will be maintained during the Exposition.

The summer courses to be offered at the opening of the Cedar Point Lake Laboratory this season are to be considerably more complete than ever before. A fine new building has been erected and ample facilities will be presented for research and individual work in botany, zoology and entomology. Arrangements are made whereby regular University credit can be allowed for much of the work done and the school is proving each year a more complete success. The course covers a period of six weeks beginning immediately after the close of the University. The work is under the immediate direction of Professors Osborn, Kellerman, Hine, Shaffner, Landacre and Mr. H. H. York.

GENERAL AGRICULTURAL NEWS.

The Iowa State College at Ames gets \$389,000 from the legislature for improvements and extensions of its work. A new farm for the dairy herd and a new creamery will be among the additions to this college of agriculture.

The Department of Horticulture of the University of Illinois is conducting extensive experiments in the cold storage of apples. The experiments include a test to determine the relative efficiency of ice storage as compared with mechanical refrigeration, a test to determine the optimum temperature for each of the leading varieties of Illinois apples, a study of the influence of various wrappings upon the keeping quality of the fruit and an investigation regarding the relation of maturity to keeping quality. Much of the fruit is still in perfect condition and the experiments will be continued until late in the spring.

G. H. Myers has given the Forest School of Yale University the library of

the late Prof. Robert Henry, of Munich, containing 1,500 books and pamphlets on forestry.

The Agricultural and Mechanical College for Negroes at Normal, Ala., has planned the development of a live stock course by the election of R. C. Parks as professor of animal husbandry. Mr. Parks is a young colored man who will be graduated this year from the Iowa College of Agriculture.

The fifty-seventh annual report of the Ohio State Board of Agriculture has been published. It is a bulky volume of nearly 1,000 pages and contains the board's report, made according to law, to the General Assembly of the State. The report includes transactions of the board for 1903, crop and stock statistics, agricultural statistics, comparative tables of farm products, proceedings of State and county institutes, report of orchard and nursery inspection, live stock inspection and kindred matters. The book may be obtained from Secretary W. W. Miller, Columbus, O.

Prof. L. H. Bailey of Cornell University, will superintend the nature study courses in the summer session of the University of Tennessee.

Newton C. Rew, Ames, Ia., has been called to the head of the Animal Husbandry Department of the Alabama Polytechnic College at Auburn. Prof. Rew was a graduate of the Iowa College of Agriculture in 1902, and has been taking post-graduate work at that institution. He had charge of one of the extensive cattle feeding experiments at Odebolt.

The President has transmitted to Congress a lengthy report on the beet sugar industry, prepared by Charles F.

Saylor, special agent of the Department of Agriculture, and based on observations in the fifty-six factories now established. The conclusion is that the industry cannot longer be considered an experiment, but as a fixed addition to the agriculture and manufactories of this country. Four factories have been established since the last report on this subject.

In the Indian Affairs appropriation bill now before Congress there is one item of \$100,000 to be used in establishing an Indian Agricultural School at Wanpeton, North Dakota.

Hon. F. D. Coburn, Chief of the Live Stock Exhibit of the Louisiana Purchase Exposition, has been compelled to resign his position on account of failing health. This is a severe blow to the live stock interests of the exposition, as Mr. Coburn was an especially competent man.

Wyoming College of Agriculture held its first short course this season, the term extending from March 1 to 12. There were 150 students in attendance. Much attention was given to methods of irrigation, the reclamation of alkali land and to animal industry.

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The McLaughlin Bros. first importation for this year landed in New York Tuesday morning, April 12, was transferred to three Adams Express cars which arrived here Wednesday morning, and one car was sent on to Kansas City immediately. Every horse that started from France arrived here well and in good condition.

The demand for Percheron and French coach stallions is so great that Mr. James McLaughlin is now preparing to send over another lot some time next month.

